

What is claimed is:

1. A method for augmenting a wheeled vehicle in order to enhance its occupant protection capability, said vehicle including a cabin and an undercarriage, said undercarriage including an undercarriage portion situated beneath said cabin, said undercarriage portion including a pair of floorboard portions and a central portion intermediate said floorboard portions, each said floorboard portion being at least substantially characterized by structural continuity, said method comprising covering each said floorboard portion with an elastomeric layer and a non-elastomeric layer so that said elastomeric layer is interposed between said floorboard portion and said non-elastomeric layer, wherein with respect to each said floorboard portion the combination including said floorboard portion and its associated said elastomeric layer and its associated said non-elastomeric layer essentially represents a three-layer material system, said floorboard portion and said non-elastomeric layer each being more rigid than said elastomeric layer.

2. The method of claim 1, wherein each said three-layer system effects at least one dissipative mechanism in response to an impacting event, said at least one dissipative mechanism including constrained layer damping.

3. The method of claim 1, said central portion being at least substantially characterized by structural discontinuity, said method further comprising covering said central portion with an elastomeric layer and a non-elastomeric layer so that said non-elastomeric layer is interposed between said central portion and said elastomeric layer, wherein with respect to said central portion the combination including its associated said elastomeric layer and its associated said non-elastomeric layer essentially represents a two-layer material system, said non-elastomeric layer being more rigid than said elastomeric layer.

4. The method of claim 3, wherein said elastomeric layer faces downward, and wherein said two-layer material system effects deflection in response to an impacting event.

5. The method of claim 3, said vehicle further including two pairs of axial wheels and two pairs of non-horizontal wheel wells, each said wheel well being associated with a said wheel, each said wheel well being at least substantially characterized by structural continuity, said method further comprising covering each said wheel well with an elastomeric layer and a non-elastomeric layer so that said elastomeric layer is interposed between said wheel well and said non-elastomeric layer, wherein with respect to each said wheel well the combination of said wheel well and its associated said elastomeric layer and its associated said non-elastomeric layer represents a three-layer material system, said

wheel well and said non-elastomeric layer each being more rigid than said elastomeric layer.

6. The method of claim 5, wherein:

each said three-layer system effects at least one dissipative mechanism in response to an impacting event, said at least one dissipative mechanism including constrained layer damping; and

said two-layer material system effects deflection in response to an impacting event.

7. The method of claim 5, wherein each said non-elastomeric layer is at least substantially composed of a material selected from the group consisting of metal and composite.

8. The method of claim 5, wherein a generally integral protective shield is described by the combination including:

both of said three-layer material systems that are provided each with respect to a said floorboard portion;

said two-layer material system that is provided respect to said central portion; and

all four of said three-layer material systems that are provided each with respect to said wheel wells.

9. The method of claim 8, wherein:

each said three-layer system effects at least one dissipative mechanism in response to an impacting event, said at least one dissipative mechanism including constrained layer damping; and

said two-layer material system effects deflection in response to an impacting event.

10. The method of claim 8, wherein each said non-elastomeric layer is at least substantially composed of a material selected from the group consisting of metal and composite.

11. The method of claim 10, wherein:

each said three-layer system effects at least one dissipative mechanism in response to an impacting event, said at least one dissipative mechanism including constrained layer damping; and

said two-layer material system effects deflection in response to an impacting event.

12. The method of claim 1, said vehicle further including two pairs of axial wheels and two pairs of non-horizontal wheel wells, each said wheel well being associated with a said wheel, each said wheel well being at least substantially characterized by structural continuity, said method further comprising covering each said wheel well with an elastomeric layer and a non-elastomeric layer so that said elastomeric layer is interposed between said wheel well and said non-elastomeric layer, wherein with respect to each said wheel well the combination of said wheel well and its associated said elastomeric layer and its associated said non-elastomeric layer represents a three-layer material system, said wheel well and said non-elastomeric layer each being more rigid than said elastomeric layer.

13. The method of claim 12, wherein each said three-layer system effects at least one dissipative mechanism in response to an impacting event, said at least one dissipative mechanism including constrained layer damping.

14. A method for rendering a vehicular cabin assembly more occupant-protective, said cabin assembly including a cabin body, four wheel-facing bulkheads and two floorboards separated by a space therebetween, each said bulkhead adjoining a said floorboard, said

method comprising providing shielding means for said cabin body, said providing shielding means including:

at each said bulkhead, establishing a sandwich construction that includes said bulkhead, elastomeric material, and non-elastomeric material, wherein said elastomeric material is sandwiched between said bulkhead and said non-elastomeric material;

at each said floorboard, establishing a sandwich construction that includes said floorboard, elastomeric material, and non-elastomeric material, wherein said elastomeric material is sandwiched between said floorboard and said non-elastomeric material; and

at least substantially covering said space between said floorboards, said at least substantially covering including attaching to said cabin assembly a double-layer construction that includes elastomeric material and non-elastomeric material, wherein said elastomeric material is underneath said non-elastomeric material.

15. The method of claim 14, wherein said shielding means includes the integration of:

said sandwich constructions at said bulkheads;

said sandwich constructions at said floorboards; and

said double-layer construction attached to said cabin assembly.

16. The method of claim 15, wherein said shielding means is both dissipative and deflective with respect to forceful influence exerted upon said cabin assembly.

17. An occupant-protective understructure suitable for incorporation as part of a wheeled vehicle, said wheeled vehicle having a front vehicle end, a rear vehicle end, a left vehicle side, and a right vehicle side, said understructure comprising:

two separated, at least approximately coplanar floor components, said two floor components being a left floor component and a right floor component, said left floor component having a left floor component front end and a left floor component rear end, said right floor component having a right floor component front end and a right floor component rear end, each said floor component including two rigid layers and an elastomeric layer sandwiched therebetween; and

four wheel bulkhead components each for placement proximate a wheel of said vehicle, said four wheel bulkhead components being a left front wheel bulkhead component, a right front wheel bulkhead component, a left rear wheel bulkhead component, and a right rear wheel bulkhead component, each said wheel bulkhead component including two rigid layers and an elastomeric layer sandwiched therebetween, said left front wheel bulkhead component adjoining said left floor component at said left floor component front end, said right front wheel bulkhead component adjoining said right floor component at said right floor component front end, said left rear wheel bulkhead component adjoining said left floor component at said left floor component rear end, said

right rear wheel bulkhead component adjoining said right floor component at said right floor component rear end, each said wheel bulkhead component being disposed at an angle with respect to the adjoining said floor component.

18. The understructure of claim 17 further comprising a middle component including a rigid layer and an elastomeric layer on the underside of said rigid layer, said middle component being interposed between said two floor components so as to be at least nearly coplanar with said two floor components.

19. The understructure of claim 18, said vehicle being adaptable to carrying at least one occupant, wherein in response to forceful influence exerted upon said vehicle, said four wheel bulkhead components, said two floor components and said middle component aggregately shield said at least one occupant.

20. The method of claim 19, wherein said aggregate shielding includes both dissipation and deflection with respect to said forceful influence.

21. A wheeled vehicle attributed with occupant protectiveness against injurious force encountered by said vehicle, said vehicle comprising a cabin body, a cabin underside, two

pairs of axial wheels, and two pairs of wheel well areas, said cabin underside including two side floorboard areas and a non-floorboard area intermediate said floorboard areas, each said wheel well area being associated with a said wheel, said floorboard areas and said wheel well areas each being characterized by a laminar configuration including two rigid layers and an elastomeric layer therebetween, said non-floorboard area being characterized by a laminar configuration including a rigid layer and an elastomeric layer in which said elastomeric layer faces downward.

22. The vehicle of claim 21 wherein said floorboard areas, said non-floorboard area and said wheel well areas collectively form a buffer for said cabin, said buffer generally describing a dish shape.

23. The vehicle of claim 22, said vehicle having a front end and a rear end, wherein each said floorboard area adjoins a front said wheel well area and a rear said wheel well area so as to generally describe a bracket shape, and wherein said non-floorboard area adjoins said floorboard areas so as to generally describe a planar shape.

24. The vehicle of claim 23 wherein, in response to injurious force encountered by said vehicle, said buffer acts to deflect the impact and to dissipate the energy that are associated with said injurious force.

25. The vehicle of claim 24 wherein each said rigid layer at least substantially consists of a material selected from the group consisting of metal and composite.

26. The vehicle of claim 22 wherein, in response to injurious force encountered by said vehicle, said buffer acts to deflect the impact and to dissipate the energy that are associated with said injurious force.
27. The vehicle of claim 22 wherein each said rigid layer at least substantially consists of a material selected from the group consisting of metal and composite.
28. The vehicle of claim 27 wherein, in response to injurious force encountered by said vehicle, said buffer acts to deflect the impact and to dissipate the energy that are associated with said injurious force.